

## EXPEDICIÓN INTERNACIONAL

WEEK Two  
OCT 2-OCT 8

## VAQUITA MARINA 2015



### CHIEF SCIENTISTS:

LORENZO ROJAS-BRACHO

BARBARA TAYLOR

### CRUISE LEADER:

TIM GERRODETTE

### VISUAL SURVEY

### COORDINATOR:

ANNETTE HENRY

### SCIENTISTS (A-Z):

MELODY BARAN

DAWN BREESE

SUSANNAH CALDERAN

SARAH MESNICK

PAULA OLSON

ROBERT PITMAN

TODD PUSSEY

JUAN CARLOS SALINAS

ADAM Ü

ERNESTO VAZQUEZ

SUZANNE YIN

### HONORARY VAQUITA

### OBSERVER:

SECRETARY RAFAEL

PACCHIANO ALAMÁN



R/V OCEAN STARR  
STABBERT  
MARITIME

### ESTIMATING ABUNDANCE OF MEXICO'S CRITICALLY ENDANGERED PORPOISE

## SURVEY OVERVIEW

Vaquitas are a critically endangered porpoise found only in a small part of the Upper Gulf of California, Mexico. Vaquita are the smallest porpoise and have the smallest distribution of any marine mammal. Recent acoustic data indicating a strong decline in vaquita numbers prompted the government of Mexico to take unprecedented steps to save their porpoise from extinction resulting from accidental deaths when animals drown in fishing nets that are set for fish and shrimp. The 2-year ban on gillnets within the distribution of vaquitas was announced by President Peña Nieto in April of 2015. This survey will obtain the most precise abundance estimate of vaquitas possible at the beginning of the ban period.

The Vaquita Expedition 2015 will take place from September 26 to December 3. Chief Scientists for the survey are Lorenzo Rojas-Bracho (from Mexico's Department of Environment and Natural Resources, SEMARNAT) and Barbara Taylor (from Southwest Fisheries Science Center, NOAA Fisheries); the survey is being supported by SEMARNAT. Both visual and acoustic methods are required to obtain a precise abundance estimate. The entire distribution of vaquitas between 20 and 50 meters deep will be visually surveyed from a research ship (the R/V *Ocean Starr*) using 6 huge binoculars called 'big eyes'. These 25-power binoculars are needed to see the shy vaquita before they react to the ship. Scientists came from Mexico, the US, United Kingdom and Germany to provide porpoise sighting expertise.

Mexico is a world leader in acoustic monitoring of porpoises using a passive acoustic device called a CPOD. Armando Jaramillo-Legorreta and his team will deploy 134 CPODs in a grid in the shallow water vaquita distribution where the ship cannot go. The CPODs detect the very high frequency clicks that vaquitas use to find fish in the productive, muddy waters. Developing the acoustic monitoring system was the primary objective of the last vaquita survey in 2008. The system was designed to detect the hoped for 4%/year recovery of vaquita. Instead, the system detected a dramatic 67% decline between 2011 and 2014.

The project is a research collaboration between SEMARNAT and the Southwest Fisheries Science Center, NOAA Fisheries. Support is provided from Instituto Nacional de Ecología y Cambio Climático, Comisión Nacional de Áreas Naturales Protección, Comisión Nacional para el Conocimiento y uso de la Biodiversidad, and The Marine Mammal Center.

CREW OF THE  
R/V OCEAN STARRCAPTAIN  
BILL ROTHSCHILDCHIEF MATE  
RICHARD ZIMMERSECOND MATE  
PATRICK PIERCECHIEF ENGINEER  
MELVIN KUFELDTENGINEERS  
DEMETRIUS SIMMONS  
DAVID HAMPTON  
JEREMY JAMESCHEF  
CRYSTAL NAILORCOOK  
ADAM GAUTNEYBOSUN  
ARMANDO URRUTIADECK HANDS  
KRIS PARKER  
JOSE VALENTINCOMPANY REP.  
DON FEIL

## VISUAL TEAM WEEKLY SCIENCE SUMMARY

*"We made a trip into the Gulf; sometimes we dignified it by calling it an expedition. Once it was called the Sea of Cortez, and that is a better-sounding and a more exciting name.*

*The Sea of Cortez, or Gulf of California, is a long, narrow, highly dangerous body of water. It is subject to sudden and vicious storms of great intensity."*

*John Steinbeck, Sea of Cortez*

*A leisurely Journal of Travel and Research, 1941*

We normally refer to our at sea research as a "cruise". Our cruises are not to be confused with luxury cruises though we all thoroughly enjoy our work. We dignified this "*trip into the Gulf*" with the title of Expedition because for the government of Mexico it is import to have the best scientific data possible to Mexico to continue its management efforts for vaquita. The formal name of the survey "Expedición Internacional Vaquita Marina 2015 captures the importance of the research and the international effort.

Abundance estimation of mammals in the sea is made easier by their compulsory need to surface for air. Still, these animals lead most of their lives below water and allow us only tiny glimpses of their bodies and their lives. For the smallest marine porpoise, this glimpse is fleeting indeed. The scientist's job is to detect a tiny triangle with a rolling motion from out of the millions of triangles presented by the seas' waves. Once the triangle is determined to be a dorsal fin, the species must be quickly and correctly identified. We do this using huge binoculars called "big eyes" that allow us to see miles ahead of the ship. Vaquita, however, are so small that we usually get to see only a few rolls of their distinctive triangular dorsal fin at a relatively close range and then only if the seas are glassy or nearly so. Conditions must be so perfect that we planned our expedition to last over two months in hopes of a few weeks of acceptable porpoise-viewing weather.

This week was not a week with 'vaquita weather'. Windy conditions limited the time we could search for vaquitas with the "big eyes." When conditions allowed us to work, we had a total of 32 marine mammal sightings in 43.4 nautical miles (80.4 km) of transect effort, but no vaquitas were seen. Because we did not include a map with last week's report, the map this week includes sightings and effort from the beginning of the cruise on Sep 27 through Oct 8. We have posted new material on the Southwest Fisheries Science Center, NOAA Fisheries website: [Expedición Vaquita 2015](#)

The website has many useful details on survey design and on vaquita biology, population abundance and conservation efforts and will be regularly updated with more photographs and field reports from both the visual and acoustic components of the survey. A similar website hosted by the Mexican government's Instituto Nacional de Ecología y Climático Cambio is under construction and will be online soon: [Vaquita Marina](#). A detailed news article also came out in National Geographic about our first vaquita sightings: [Encounter with world's rarest ocean marine mammal thrills scientists](#) (National Geographic, 7 Oct 2015).

Although we haven't yet experienced the "vicious storms of great intensity", winds have been high enough to hide little vaquita dorsal fins behind the green cresting waves, causing us to go "off effort" until the winds and waves die down. So, it is a fine week to relate life aboard the R/V *Ocean Starr* and tell a bit about the dedicated people needed to make this survey a success.

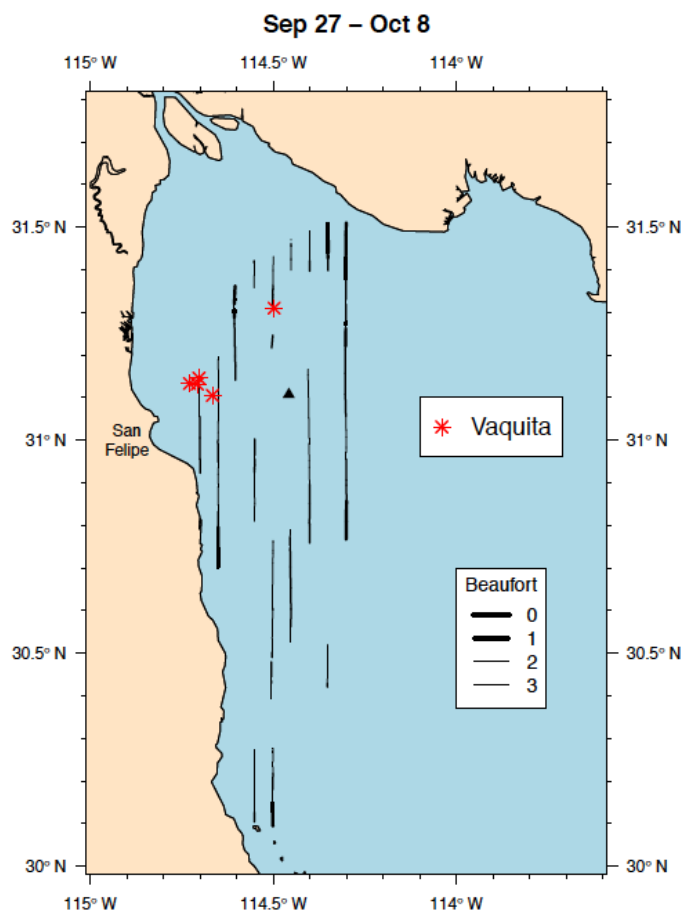
The ship is 178 feet (53.9 meters) long, and the flying bridge, where the "big eyes" are mounted, is about 30 feet (10 meters) above the water. There are 13 scientists aboard. It takes a very special team of scientists and equipment to search for the world's rarest marine mammal. Not only are vaquitas difficult to see, it also takes great skill to tell the three species of small dolphins and porpoise apart in the area of the study: common and bottlenose dolphins (when they are in small groups) and vaquitas. When individuals are seen from the side and are relatively close, they can be easily identified. However, when they are far away and going towards or away from the ship, identification requires experts that know how the animals behave. Some cases require the ship to be stopped and the animals relocated to confirm species identification, which involves skills not only in searching but using the specialized computer software that allows real-time mapping of the sightings.

For these reasons, all visual observers on Expedición Vaquita 2015 have direct experience with vaquita surveys, or experience with porpoise in areas where both porpoise and bottlenose dolphins occur together. For the two full-time recorders, experience with the specialized data-entry software WinCruz was required, together with the ability to calmly record data from two independent teams. Although vaquitas have small group sizes (where a group is defined as animals swimming within a few body lengths of one another), they are usually found in loose aggregations. When one group of vaquitas is seen, it is likely that other groups are in the area. With two independent teams of observers potentially calling in sightings at the same time, the recorders must have very special skills to gather data quickly and precisely. The final position in the scientific complement is called the 'cruise leader.' This person is responsible for choosing the transect line at the beginning of each day, coordinating ship and observer activities during the day, and reviewing the data at the end of the day. As such, this position requires an understanding of the survey design to ensure an even spatial and temporal coverage and an understanding of the initial quality screening of the data.

Collectively, the visual observers working during October have 273 years of experience with marine mammal research, 233 years of experience participating in line transect surveys and 220 years using the 'big eyes'. All have identified porpoises in areas where bottlenose dolphins are also found with a cumulative experience of 217 years among team members. For biographies and photographs of the scientific team, see: [Meet the Scientists](#) on the SWFSC website.

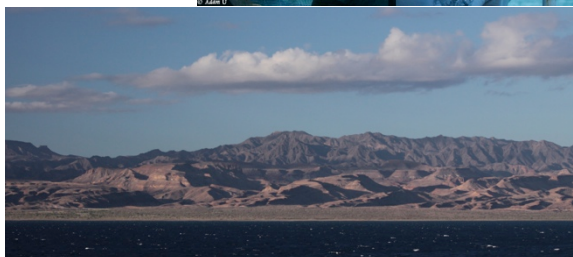
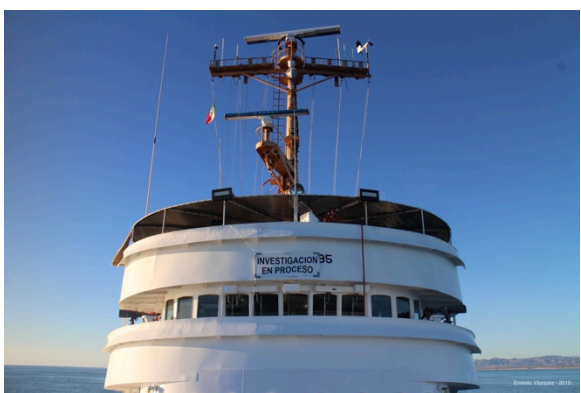
A scientific cruise like this is not possible without a talented group of people to run the ship. Captain Bill and his mates each have decades of experience at sea, and they are a pleasure to work with. The engineers, led by Chief Engineer Mel Kufeldt, work especially hard to keep the aging *Ocean Starr* going each day – and the air conditioning, water desalination and engines – running smoothly. The two stewards in the kitchen (or “mess”) are led by the ship’s chef, Krystal. Observer Bob Pitman says that this is the best food he has tasted in over 40 years’ sailing on this vessel. This week Krystal baked some special cakes for Ernesto Vázquez, who celebrated his birthday at sea. The Deck crew, led by bosun Armando Uruttia, support operations at many levels.

Sneek peek for next week: many vaquita sightings on Oct 9! Details next week.





SURVEY PHOTOS AND SCENICS





Captain Bill Rothschild



First Mate Richard Zimmer



Chief Engineer Melvin Kufeldt and Engineer Jeremy James



Captain Bill, Mate Richard, Bosun Armando Urrutia



Deck Hand Jose Valentin with Vicki



Chef Crystal Nailor slices Ernesto Vazquez' birthday cake